Residual grass herbicides in early post-emergent (EPE) weed management

Early post-emergent (EPE) use of residual grass herbicides is an effective strategy to add-to or complement IBS (incorporated by sowing) pre-emergent use patterns. Applying a residual grass herbicide to a germinated crop can provide prolonged herbicide activity and in-furrow weed control. New chemical registrations have allowed increased adoption of this use pattern, with products like Mateno® Complete in wheat and barley, Tenet® in canola and Edge Unify® in canola and legumes.

Early post-emergent timing of residual herbicides refers to the application of herbicides soon after crop emergence, with the herbicides targeting small, germinated ryegrass, or being washed into the soil to provide residual control. All the residual grass herbicides registered for EPE use (outlined below) are also registered for pre-emergent (IBS) application.

NOTE: Just because herbicides are registered for IBS and EPE use, does not mean they are safe to apply PSPE (post sowing pre-emergent)! The safety of this depends on many factors including crop selectivity, soil type, soil moisture and follow up rainfall, and disc vs tyne seeding system (size of furrows).

Tips for success for EPE use patterns

- Plan to use this strategy in advance. Best results are achieved prior to weed germination as opposed to delaying until it's a 'salvage' situation.
- Be wary of heavily relying on EPE use patterns because success is very reliant on the 'perfect' amount of rain following application, which may not align with crop stage.
    - A lack of sufficient rain may mean that the herbicide won't activate and ryegrass will continue to germinate unaffected. In contrast, heavy intense rainfall events (>15mm) can cause herbicide movement into the crop root zone, resulting in crop damage.
- To maximise efficacy and minimise the risk of herbicide resistance, a pre-emergent with a different mode of action (MOA) must be used upfront (IBS), prior to the use of a residual herbicide EPE.

Our thoughts on utilising a EPE use pattern (for various products in various crops)	
Positives	Negatives
Some products have useful foliar activity on already germinated, 1-2 leaf ryegrass	Limited foliar control on >2 leaf/early tillering ryegrass
Can provide useful in-furrow control of grass weeds (not achieved with IBS use patterns)	Results rely on a 'perfect' rainfall event; not too much rain, not too little. 10mm is ideal!
Residual control (~4 weeks) that extends later into the season (depending on product, beneficial in wet and prolonged seasons)	Later application date than IBS timing, so greater likelihood of plantback implications
Provides options for residual/'pre-emergent' grass herbicides in disc systems, with added safety over IBS	Generally requires a single product tank mix, due to crop stage/timing and crop safety
Some products have added broadleaf activity (mixtures with diflufenican i.e. Mateno® Complete) which eases the pressure off the broadleaf spray later	Creates a bottleneck of jobs, as EPE spraying often clashes with grass spraying in pulses/canola and fertiliser spreading

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EARLY POST-EMERGENT GRASS OPTIONS IN **CEREALS**

Mateno® Complete

SUMMARY TABLE	
Active ingredient(s)	Pyroxasulfone 100g/L Diflufenican 66g/L Aclonifen 400g/L
Mode of action(s)	15 (K) 12 (F) 32 (N/A)
Registered crops	Wheat (not durum), barley
EPE rate	Wheat: 750ml-1L/ha Barley: 750ml/ha
Residual activity	10-14 weeks
Cost ($/ha)	$39-51.50

Registration for use of Mateno® Complete at early post-emergent (EPE) timing in 2022 almost 'reinvigorated' EPE weed control in cereals, after previously only having access to Boxer Gold®. Unlike Boxer Gold®, Mateno® Complete is registered at EPE timing for *control* of ryegrass, when following an effective grass pre-emergent (IBS) herbicide. It also has the added benefit of foliar activity and broadleaf weed control from the diflufenican and aclonifen.

- **Weed stage:** Small ryegrass, 1-2 leaf.
- **Crop stage:** For wheat (not durum), from 1 leaf until GS23 (3 tillers). In seasons with variable crop emergence, wait until >80% of the wheat has emerged and is at 1 leaf stage. For barley, all needs to be emerged: 3 leaf until GS23 (3 tillers).
- **Ideal follow-up rainfall:** 10mm within 10 days of spraying.
- **Best results achieved when:** Sprayed early on 1-2 leaf ryegrass. Better off spraying early rather than waiting for a >10mm rainfall event, as some foliar activity is still achieved.
- **Risks:** Heavy rainfall after application causes rapid herbicide movement into the crop root zone. Barley is riskier than wheat, particularly on lighter soils. The diflufenican component can cause bleaching/yellowing, especially in overlap areas, however, it will likely grow through these crop effects. Be wary of the 21 month plantback for durum, oats, medic and lucerne, as well as potential canola plantbacks in low rainfall seasons.
- **Pre-emergent (IBS) herbicide partner:** Overwatch® is the premium choice upfront ($$$), however trifluralin + Avadex® can be useful, or Boxer Gold®. Do not use Sakura® pre-emergent if Mateno® Complete is planned for EPE use.

Boxer Gold®

SUMMARY TABLE	
Active ingredient(s)	Prosulfocarb 800g/L S-metolachlor 120g/L
Mode of action(s)	15 (J/K)
Registered crops	Wheat, durum, barley
EPE rate	2.5-3L/ha
Residual activity	4-8 weeks
Cost ($/ha)	$26-31.50

Boxer Gold® was the first residual grass herbicide registered for EPE use in Australia, in 2015. However, it only offers suppression of ryegrass and is not so commonly used now that Mateno® Complete is available. Arcade® is a straight prosulfocarb product that can be used also.

- **Weed stage:** Small ryegrass, 1-2 leaf.
- **Crop stage:** Do not apply after GS25 (5 tillers).
- **Ideal follow-up rainfall:** 10-15mm within 14 days of application.
- **Best results achieved when** a robust pre-emergent is used, targeting 1-2 ryegrass with Boxer Gold® at EPE timing. Avoid relying on this strategy for paddocks with significant ryegrass history.
- **Risks:** Heavy rainfall >15mm can cause herbicide movement into the crop root zone, resulting in crop damage. Sandy soils with low organic matter (OM) are the riskiest, as herbicide movement will be exacerbated. The S-metolachlor component has higher solubility than prosulfocarb, so consider using Arcade® (only Prosulfocarb, no S-metolachlor) on lighter textured soils.
- **Pre-emergent (IBS) herbicide partner:** Do not use Boxer Gold®, Dual Gold® or Arcade® upfront as a pre-emergent before using Boxer Gold® EPE. Sakura® or Overwatch® are the likely choices to use IBS in high ryegrass situations.

Keep on the lookout… FMC are currently working on a coded compound to control ryegrass in wheat as a post emergent use pattern. It is anticipated to go to market in 2027/28. Keep an eye out for FMC trial days, or ask us for more information.

EARLY POST-EMERGENT OPTIONS IN ONLY **CANOLA**

Tenet® (formally Butisan®)

A premium residual spike to apply early post-emergent to canola with the first grass spray. Tenet® is a useful, but variable, option for adding efficacy to grass sprays, especially where clethodim and/or glyphosate resistance is likely. It also provides residual control for later germinating ryegrass, which is useful in non-glyphosate tolerant Clearfield® and Triazine tolerant systems where we only have one shot on grasses.

SUMMARY TABLE	
Active ingredient(s)	Metazachlor 500g/L
Mode of action(s)	15 (K)
Registered crops	Canola
EPE rate	750ml/ha + other grass herbicide
Residual activity	3 weeks
Cost ($/ha)	$30

- **Weed stage:** Small ryegrass, 1-2 leaf.
- **Crop stage:** Apply from one fully expanded true leaf (i.e. not including cotyledons). Do not apply after 3 true leaves have unfolded (BBCH 13), so it has quite a narrow window.
- **Ideal follow-up rainfall:** 7-10mm rain within 7-10 days of spraying.
- **Best results are achieved when** used strategically in high ryegrass pressure situations with suspected/confirmed clethodim and/or glyphosate resistance. Expect 10-20% extra control when used with clethodim, depending on follow up rain and extent of clethodim resistance. The application window is short, so timing is important!
- **Risks:** Use of Tenet® is riskier in soils with low clay % or organic matter (OM) below 1%, as it is quite mobile. The EPE use pattern is however safer than using Tenet® upfront, as crop roots have already established. There is a 12 month plantback for wheat, durum, barley, oats, peas, chickpeas and lupins, which limits resowing options if needed. Not compatible with glyphosate in potassium salt form.

EARLY POST-EMERGENT OPTIONS IN **CANOLA** AND **LEGUMES**

For more information on grass control in canola and legumes, check out this article.

Edge Unify®

The registration of Edge Unify® in 2025 means that there is now an on-label use-pattern for propyzamide early post-emergent in canola and legumes to suppress ryegrass. The propyzamide active ingredient is generally safer to use EPE in legumes compared to canola, and has been used in various PSPE and EPE use patterns in legumes (off-label) for some time. The nicotinic acid promotes ryegrass root growth, which encourages more uptake of the propyzamide component.

SUMMARY TABLE	
Active ingredient(s)	Propyzamide 890g/kg Nicotinic acid 10g/kg
Mode of action(s)	3 (D)
Registered crops	Canola, chickpeas, faba beans, field peas, lentils, lupins, legume pastures
EPE rate	Canola: 570g/ha Legumes: 760g-1.12kg/ha
Residual activity	6-8 weeks
Cost ($/ha)	$28-56

- **Weed stage:** Small ryegrass, 1-2 leaf.
- **Crop stage:** For canola, must apply when four true leaves have unfolded (BBCH 14). For legumes, must apply when three true leaves have unfolded (BBCH 13). Do not use before or after this growth stage.
- **Ideal follow-up rainfall:** Similar to straight propyzamide, 10mm within 10 days of spraying.
- **Best results achieved when** the product is applied at the correct crop stage, with adequate moisture to follow.
- **Risks:** Transient phytotoxicity and/or poor crop vigour can be seen following post-em use, however yield loss is generally less than if the ryegrass wasn't controlled. There is a 9 month plantback requirement for cereals. Damage may occur to canola in light soils with low organic matter if spraying is followed by heavy rainfall. Not compatible with glyphosate in potassium salt form. Test a small area first, as crop safety hasn't been tested for all cultivars.

Pre-emergent (IBS) herbicide partner: Do not use any product containing propyzamide (e.g. Rustler® or Edge®) as a pre-emergent herbicide. Limited to trifluralin or Overwatch® for canola. For legumes, Ultro® is a premium option to use IBS, followed by Overwatch® (faba beans only), and trifluralin.